"Healthy environment, healthy people"

Montana Department of
ENVIRONMENTAL QUALITY

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Via E-mail and U.S. Mail

Tom Henson
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Re: Silvertip Public Surface Water Supply Sampling- No Further Sampling Required

Dear Mr. Henson:

The Montana Department of Environmental Quality (DEQ) has reviewed the *Public Surface Water Supply 2012 Data Summary Report* (the 2012 Report) dated December, 2012. ARCADIS US, Inc. (Arcadis) prepared the Plan on behalf of ExxonMobil Pipeline Company (EMPCo). Thank you for conducting this work and submitting the results to DEQ. Thank you also for collecting the water samples for volatile compounds analyses with a discrete sampler, rather than a peristaltic pump, where feasible. The 2012 Report documents the results of public surface water supply sampling (PSWS) conducted in July and August 2012. This sampling event was the second round of PSWS sampling. EMPCo and Arcadis conducted the first round of PSWS sampling in September and October 2011, with the results summarized in the December 2011 *Public Surface Water Supply Data Summary Report* (the 2011 Report). The 2012 results build upon and verify the 2011 results. This letter predominantly discusses the more recent, 2012 results.

DEQ has one comment on the 2012 Report: on page 13 (first line of the page), a reference is made to "C05 to C06 hydrocarbons" which should be "C05 to C08 hydrocarbons." DEQ does not require a revised version of the report, as this comment letter is sufficient to address this typographic error.

Based upon the data presented in the 2011 and 2012 Reports, DEQ will not require EMPCo to conduct additional surface water or sediment sampling of the public surface water supply intakes or sediment ponds in relation to the July 2011 EMPCo Silvertip Pipeline Discharge (the Discharge). What follows is DEQ's rationale for this determination.

Surface Water

EMPCo and Arcadis collected surface water samples at each of the PSWS intakes, and analyzed them with the following laboratory methods: EPA Method 8260 (for volatile organic compounds), EPA Method 8270 (for semi-volatile organic compounds), Volatile Petroleum Hydrocarbons via the Massachusetts Method, and Extractable Petroleum Hydrocarbon via the Massachusetts Method. The 8260 and 8270 methods report a broad spectrum of organic compounds, many of which are not related to crude oil. In 2012, four compounds were detected in surface water: acetone, chloroform, 2-methylnaphthalene, and naphthalene, and each is discussed, below.

- Acetone and chloroform are not components of crude oil, therefore they are not contaminants of concern for the Discharge. Acetone is a common laboratory contaminant, and chloroform may be present in background (possibly from water chlorination).
- 2-methylnaphthalene is potentially a component of crude oil, but since this compound was found at Laurel (upstream of the release), DEQ considers it to be background and not related to the Silvertip release. There is no Circular DEQ-7 Montana Numeric Water Quality Standard (DEQ-7 Standard) nor Maximum Contaminant Level (MCL) for 2-methylnaphthalene. However, it is worth noting that the highest 2-methylnaphthalene detection (0.042 ug/L sampled at Castle Rock Lake) was less than the EPA Regional Screening Level (RSL) for Tapwater for this compound (27 ug/L). Tapwater RSLs are used by DEQ as the lowest limit of concern in drinking water when evaluating potential human health risks from chemicals with no DEQ-7 Standard, MCL, or Tier 1 Risk-Based Screening Level.
- The fourth compound detected, naphthalene, is a component of crude oil. Naphthalene is also a component of most refined petroleum products such as gasoline, diesel fuel, heating oils, and jet fuel. Naphthalene was detected at similar concentrations in four sample locations, including Laurel (located upstream of the release). Because of the naphthalene detection in background at Laurel, DEQ cannot attribute the downstream naphthalene detections to the Discharge. Also, the DEQ-7 Standard for naphthalene in surface water is 100 ug/L, which is three orders of magnitude higher than the detections of naphthalene (0.03 to 0.041 ug/L, all of which were "estimated" detections below the laboratory quantitation limit) from the PSWS intakes. There is no MCL for naphthalene. Because the levels of naphthalene in surface water from the PSWS intakes are well below the DEQ-7 Human Health Standard, and because naphthalene was found in background, DEQ will not pursue additional cleanup or remedial actions.

Sediment

In order to address the possible negative effects on PSWSs from sediment potentially contaminated by the Discharge, sediment samples were collected near PSWS intakes in the Yellowstone River bed and Castle Rock Lake bed. The sediment samples were analyzed with the same methods that analyze surface water. Similar to the surface water results, some of the compounds reported by the 8260 and 8270 analyses are not related to crude oil. Sediment sample results were compared to the EPA Region 3 BTAG (BTAG stands for Biological Technical Assistance Group) screening benchmarks for contaminants in freshwater sediment. EPA developed the BTAG screening benchmarks for use in ecological risk assessment. DEQ uses BTAG screening benchmarks as generic, conservative values to compare concentrations of contaminants in sediment. More information about BTAG screening benchmarks is available at: http://www.epa.gov/reg3hwmd/risk/eco/index.htm. In general, if a contaminant's highest concentration in sediment at a site is less than its BTAG benchmark, then DEQ does not require additional remedial action regarding that compound. For some compounds, there is no applicable BTAG benchmark. For petroleum compounds where no BTAG benchmark is available, DEQ may compare sediment concentrations to the most conservative (i.e. protective) Tier 1 Risk-Based Screening Level ("RBSL", as presented in DEQ's Risk-Based Corrective Action Guide dated September 2009) for that compound. RBSLs were calculated to be protective of long-term human direct contact to soils and of contaminant leaching to groundwater, and are not designed to address impacts to the aquatic environment.

Several compounds were detected, however, only two compounds (Bis(2-ethylhexyl)phthalate and 2-methylnaphthalene) had detectable concentrations that exceeded a BTAG screening benchmark. These detections that exceed the BTAG screening benchmarks are described below, with additional discussion regarding other sediment results.

- At the Hysham intake, Bis(2-ethylhexyl)phthalate (BEHP) was detected at 2.1 milligrams per kilogram (mg/kg), which exceeds the BTAG screening benchmark of 0.18 mg/kg. The 2012 Hysham sediment sample was the only PSWS sample with a detectable level of BEHP. DEQ's review of at least 146 sediment sample results collected in response to the Discharge did not find

detectable levels of BEHP in any other sediment sample collected along the Yellowstone. If BEHP were a related to the Discharge, it would be reasonable to expect to find higher concentrations of it closer to the pipeline break in Laurel, and in other sediment samples. BEHP and other phthalates have been found by the United States Geological Survey (USGS) in the Yellowstone River Basin in sediment samples collected in the late 1990's (see *Organic Compounds and Trace Elements in Fish Tissue and Bed Sediment from Streams in the Yellowstone River Basin, Montana and Wyoming, 1998, Water Resources Investigations Report 00-4190*; available at http://pubs.usgs.gov/wri/wri004190/pdf/wri004190.pdf) and also in a slough that runs through Fairbanks, Alaska (*Assessment of Fish Habitat, Water Quality, and Selected Contaminants in Streambed Sediments in Noyes Slough, Fairbanks, Alaska, 2001-2002, Water Resources Investigations Report 03-4328*; available at http://pubs.usgs.gov/wri/wri034328/pdf/wrir034328.pdf). BEHP is a plasticizer that is added to plastics, is not a component of crude oil, and is not thought to be related to the Discharge. DEQ would like to note that DEQ's Water Quality Protection Bureau (WQPB) maintains a database that includes the environmental data collected in response to the Discharge. The Monitoring and Assessment Section of the WQPB will review the results as they pertain to non-point source issues, and follow-up as appropriate.

- In the Castle Rock Lake sediment sample, 2-methylnaphthalene, a petroleum compound, was detected at 0.042 mg/kg, which exceeds the BTAG screening benchmark of 0.0202 mg/kg. The Castle Rock Lake sample was the only sample where 2-methylnaphthalene exceeded the BTAG screening benchmark. This compound was detected at similar concentrations in all of the sediment samples at concentrations ranging from 0.0032 (J) to 0.042 mg/kg including the upstream or background sample at Laurel (the "(J)" qualifier assigned by the laboratory to some results indicates that the chemical was present in the sample but below the concentration that the laboratory can quantify, and the result should be considered an estimate). Because of the 2-methylnaphthalene detection at Laurel, DEQ cannot attribute the downstream naphthalene detections to the Discharge.
- Toluene, another petroleum chemical, was detected in three sediment samples (0.003(J) to 0.031 mg/kg). At this time, there are no BTAG screening benchmarks or other sediment screening values for toluene. Therefore, DEQ compared the toluene concentrations to the most conservative DEQ Tier 1Risk-Based Screening Level (RBSL) for toluene in soil, which is 10 mg/kg (based upon protection of leaching to groundwater). The toluene detections in sediment are well below the RBSL. Also, toluene was not detected in co-located surface water samples, which suggests that the toluene in the sediment is not impacting surface water. Toluene was not found in sediment at Laurel in 2012, but was found in sediment in Laurel in 2011, which suggests that toluene may be present in background sediments. As the levels of toluene are below the most protective RBSL and do not appear to be impacting surface water, DEQ will not pursue additional cleanup or remedial actions.
- A number of compounds were "not detected" in sediment, but the detection limits for these compounds were above applicable screening values. DEQ notes that most of these compounds are not related to crude oil. The compounds potentially related to crude oil that were "not detected" but at detection limits greater than screening levels are acenaphthene and acenaphthylene; however, the detection limits for these two compounds were only slightly higher than their respective BTAG benchmark. Also, two of the samples had non-detect levels of acenaphthene and acenaphthylene at detection limits less than the applicable BTAG screening benchmark. Therefore, DEQ has determined that current sampling is adequate to determine that these compounds do not pose an unacceptable risk to the environment. These compounds were also not detected in surface water.
- A number of polynuclear aromatic hydrocarbons (PAHs) were detected in the sediment samples, but none of the concentrations exceeded applicable BTAG screening values (or there are no applicable screening values). In addition, four of these PAHs were also found in sediment at

Laurel (i.e. upstream of the discharge). As the levels of these PAHs are below the BTAG screening values and/or were also found at similar concentrations in the background sample, DEQ will not pursue additional cleanup or remedial actions. DEQ notes that the 1998 USGS report (referenced above) describes the detections of approximately 20 different PAHs in the bed-sediment samples collected from the Yellowstone River at Billings, among other locations with PAH detections, which documents that PAHs were present in the Yellowstone River sediments before the Discharge. For example, the USGS 1998 report indicates the PAH compound pyrene in Yellowstone sediment at Billings at 0.170 mg/kg while the highest level of pyrene reported in the 2012 PSWS Report was 0.0092 mg/kg, also at Billings.

In addition to the samples collected specifically to address potential impacts to the PSWSs, other remedial investigations have occurred in response to the Silvertip release that support the results of the PSWS sampling and DEQ's determination to not require EmpCo to conduct additional PSWS sampling in relation to the Discharge. As of November 9, 2011, surface water samples from at least 164 locations and sediment samples from at least 146 locations had been collected by EPA, DEQ, and ExxonMobil. More samples have since been collected. Surface water and sediment sample results, with a few minor exceptions, have all been "non-detect" or below applicable standards or screening levels for petroleum hydrocarbons. Petroleum hydrocarbons that may remain in the river environment are expected to continue to weather and biodegrade.

Based upon the results in the 2011 and 2012 Reports, DEQ has determined that petroleum hydrocarbons from the Discharge that may remain in the Yellowstone River sediments and surface water do not appear to pose an unacceptable risk to human health via the PSWS pathway. As previously stated in this letter, at this time DEQ will not require EMPCo to conduct additional investigation or remedial actions regarding PSWSs along the Yellowstone in regards to the Discharge. However, DEQ reserves the right to conduct or require additional remedial actions regarding PSWSs in the future if new or different information is presented to DEQ that indicates additional soil, sediment, or state waters have been impacted by the Discharge or if a new release occurs.

Please contact me if you have any questions or concerns about this letter. On behalf of DEQ, I wish to thank EMPCo and Arcadis for addressing concerns regarding potential impacts from the Discharge to PSWSs along the Yellowstone River.

Sincerely,

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